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ABSTRACT

The purpose of the 6-year Minnesota Student Characteristics and Occupationally Related Education Project is to identify criteria which are useful to counselors and others in the selection and counseling of post-high school vocational-technical students as they choose specific vocational-technical curriculums. The initial phase collected preenrollment data on 17,500 Minnesota area vocational-technical school applicants. This phase is a pilot followup of 1,128 graduates of Minnesota Area Vocational-Technical Schools 1 year after graduation, to gather data related to their relative success on the job. The specific purpose is to test the effectiveness of various incentives designed to maximize the percentage of mailed questionnaire returns. Data were based on 576 (52 percent) responses obtained during a 4-week period. Other variables included time interval, sex, and occupational cluster. Percentage of returns can be increased by introducing incentives into the followup procedures. A related document is available as ED 025 658. (CH)

QUESTIONNAIRE FOLLOW-UP RETURNS AS A FUNCTION OF INCENTIVES AND RESPONDER CHARACTERISTICS

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BACKGROUND

Project MINI-SCORE (Minnesota Student Characteristics and Occupationally Related Education) is a comprehensive, six-year research project designed to assess the basic competencies and characteristics of vocational students to determine the degree to which each is directly associated with the successful performance of those who graduate. The initial phase of the study gathered pre-enrollment test data on approximately 17,500 applicants to the post high school area vocational-technical schools of Minnesota during the period from September 1, 1966 to October 1, 1968. Some of these students were accepted to vocational programs and graduated. The present phase involves a follow-up of students one year after graduation to gather data related to their relative success on the job. The next phase will be concerned with determining which of the variables measured prior to enrollment are useful in predicting success on the job.

STATEMENT OF THE PROBLEM

By the summer of 1968, the first group of 1128 graduates had been graduated for one year. Because of the large scale of the total follow-up, it was decided to use this initial group to test various procedures to maximize the percentage of mailed questionnaire returns. It was also decided to analyze the response patterns to gain information regarding the characteristics of respondents and non-respondents, with the particular aim of identifying, as early as possible, potentially "reluctant" groups which would require special follow-up strategies.

REVIEW OF THE LITERATURE

Considerable attention has been given to increasing the rate of return of questionnaires through variations in construction and follow-up procedures. Scott (1961) in an extensive study for the British Government Social Survey, investigated the effect of: (a) stamped versus business reply envelopes, (b) official sponsorship, (c) personalizing the cover letter, (d) a letterhead, (e) colored paper, and a number of other factors. He found stamped envelopes and official sponsorship to be effective. Reporting on response to Project TALENT questionnaires, Orr and Neyman (1965) found the average cost for handling and mailing the questionnaire to be 58.6 cents per respondent using a total of four mailings and achieving some 69.7 per cent response from an original 88,000 subjects. They also found that the length of the questionnaire affected the return rate, with approximately 37 per cent response for a four page questionnaire versus approximately 30 per cent for an eight page questionnaire 35 days after first mailing. They further reported that the peak return rate occurred 12 days after mailing and that response rate was positively correlated with aptitude scores.

Moore (1941) found that a typewritten letter of transmittal increased the return rate significantly over a duplicated letter. Others have suggested that neatness rather than the actual method of reproduction is the important factor. Sletto (1940) found that the nature of the appeal for assistance made in the cover letter affected the rate of return, with the most effective for his group of former college students being an appeal to help improve education for others. Gerberich and Mason (1948) found that whether or not a subject was asked to sign the questionnaire made little difference in the item response. Others have pointed out that the nature of the material being investigated would possibly affect the return rate of confidential versus non-confidential questionnaires.

Listed below in summary form are a number of techniques or variables that persons have either shown or have hypothesized might affect the rate of return

of questionnaires. The list is categorized into: (a) questionnaire construction and (b) follow-up procedures.

Questionnaire Construction

Some evidence and/or opinion suggests that returns may be increased by constructing a questionnaire that:

1. is logical in question organization.
2. is clear and unambigurous in wording - unbiased in phrasing.
3. is non-repretitive and non-trivial.
4. is as brief as possible.
5. is attractively reproduced.
6. avoids the use of the word "questionnaire".
7. keeps directions brief, clear, and distinct.
8. is printed on colored paper.

Follow-up Procedures

Some evidence and/or opinion suggests that returns may be increased by using follow-up techniques that:

1. include a return addressed stamped envelope.
2. use a stamped rather than a business reply envelope.
3. include official sponsorship by a party respected by the potential respondent.
4. include a personalized accompanying letter.
5. consider the time of mailing the questionnaire (day of the week and time of the year).
6. include assurance of confidentiality.
7. offer a summary of results.
8. contain a deadline date for returning.

OBJECTIVES

The questions examined in the study were:

1. Are there differences in total questionnaire returns among groups who receive <u>different incentives</u> to encourage them to return the questionnaires?

2. Are there differences in total questionnaire returns among groups who receive <u>different numbers of incentives</u> to encourage them to return the questionnaires?

3. Are there differences between groups that receive <u>different numbers of incentives</u> in terms of the amount of time it takes group members to return their questionnaires?

4. Does the sex of the subject affect the probability of responding and is the effect of the different numbers of incentives different for males and females?

5. Does the occupational skill level of the subject affect the probability of responding and is the effect of different numbers of incentives different for different occupational skill levels?

PROCEDURE

Population

The population consisted of 1128 graduates from the twenty-four, post-high school, Minnesota Area Vocational-Technical Schools taking part in Project MINI-SCORE who had graduated 12 months prior to the study for whom data had been reported. The study was undertaken during the Winter of 1967. The graduates represented 26 different trade areas ranging from practical nursing to clerical training and from electronics to welding. These graduates were the first of the Project MINI-SCORE students available for follow-up. One possible limitation should be noted; because they were the first graduates, it is probable that the group represented the shorter-term vocational programs of the total vocational offerings.

Method

The names of 1100 graduates were randomly assigned to 11 groups of 100 persons each. The remaining 28 subjects were used to informally pilot test the questionnaire two weeks before the main follow-up study began. Treatments were randomly assigned to groups.

After persons were assigned to groups and groups assigned to treatments, the mailings were prepared. All 1100 questionnaires were mailed at the same time. A daily record was kept of returned questionnaires. No reminders or other communications were sent during the four week period of the study.

Treatments

The treatments for the 11 groups were as follows. All treatments included a stamped return addressed envelope.

1. Control treatment - zero incentives - regular questionnaire and cover letter. The regular questionnaire consisted of sections on additional training since graduation, employment information including a work history, and job satisfaction. The questionnaire was printed on plain white paper and was lightly overprinted in red with the word CONFIDENTIAL. The personalized cover letter briefly explained the intent of the follow-up and how important it was to the success of the project that the questionnaire be completed and returned.

2. Pencil treatment - one incentive - A short pre-sharpened "golf" pencil inscribed with the phrase, THANKS/UNIVERSITY OF MINNESOTA, was included with the regular questionnaire. The cover letter was essentially the same as the standard cover letter except for a brief reference to the enclosed pencil.

3. Coffee treatment - one incentive - A "cup size" packet of instant coffee and the regular cover letter altered slightly to note the enclosed coffee were included with the regular questionnaire.

4. Colored questionnaire treatment - one incentive - This treatment was identical to the control treatment, except the questionnaire itself was printed on light green paper.

5. Pre-letter treatment - one incentive - The questionnaire and cover letter were identical to the control treatment. However, one week prior to mailing the questionnaire, a letter was sent to each person in the group indicating that they would be asked to help with the study and that a questionnaire would soon be sent to them.

6. Pencil and colored questionnaire treatment - two incentives - This treatment combined treatments 2 and 4.

7. Pencil and pre-letter treatment - two incentives - This treatment combined treatments 2 and 5.

8. Pencil, colored questionnaire and pre-letter treatment - three incentives - This treatment combined treatments 2, 4 and 5.

9. Coffee and colored questionnaire treatment - two incentives - This treatment combined treatments 3 and 4.

10. Coffee and pre-letter treatment - two incentives - This treatment combined treatments 3 and 5.

11. Coffee, colored questionnaire and pre-letter treatment - three incentives - This treatment combined treatments 3, 4 and 5.

RESULTS

By treatment

The total number of returns for each group at the end of the four week study period is reported in Table I. The percentage of respondents is also reported.[1]

TABLE I

OVERALL RESPONSE PER TREATMENT GROUP

	Actual[1] Group Size	Number Returned	Percentage Returned
Group 1 (control)	98	42	42.9
Group 2 (pencil)	95	52	54.7
Group 3 (coffee)	97	48	49.5
Group 4 (color)	98	49	50.0
Group 5 (pre-letter)	97	50	51.5
Group 6 (pencil and color)	97	51	52.6
Group 7 (pencil and pre-letter)	97	56	57.7
Group 8 (pencil, color and pre-letter)	96	60	62.5
Group 9 (coffee and color)	99	55	55.6
Group 10 (coffee and pre-letter)	98	53	54.1
Group 11 (coffee, color and pre-letter)	95	60	63.2

A chi-square test of the differences in return rates between the eleven groups yielded a chi-square value of 13.28 ($.20 < P < .30$). It is interesting to note that although the probability level is not impressive, the differences were in the expected direction and that the range between the response rate of the control group (the lowest) and the coffee, colored questionnaire and pre-letter group (the highest) was 20.3 per cent.

By Number of Incentives

The eleven treatments were clustered on the basis of the number of incentives

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[1]The actual group sizes used in the calculations were arrived at by subtracting the number of questionnaires per group undelivered because of insufficient address from the original 100 per group. The problem was to study the effectiveness of the incentives. Therefore, if the questionnaire did not reach an individual the incentives had no possibility of being effective.

in each treatment, ranging from zero incentives for the control treatment to three incentives for treatments 8 and 11. The actual number and the percentage of persons returning the questionnaires for each number of incentives is shown in Table II.

TABLE II

RETURN PER NUMBER OF INCENTIVES

Number of Incentives

	0	1	2	3	Total
Returned	42(42.9%)	199(51.4%)	215(55.0%)	120(62.8%)	576(54.0%)
Non-Returned	56(57.1%)	188(48.6%)	176(45.0%)	71(37.2%)	491(46.0%)
Total	98(100%)	387(100%)	391(100%)	191(100%)	1067

A chi-square test of the data reported in Table II yielded a X^2 value of 12.09 ($P < .01$). The differences in response rate consistently and significantly favored an increased number of incentives.

Incentives by Time Interval

To study the effect of the number of incentives on the rate of response, the four week study period was divided into 8 intervals, with the interval periods ending on Tuesdays and Fridays. The number of questionnaires returned during each interval was recorded for each of the four incentive clusters. Although the intervals were unequal in length - 4 days and 3 days - the longer period included the weekend.

The per cent of returns per time interval for each incentive cluster is presented in Table III. The total number of returns for each incentive cluster equals 100 per cent.

The responses began in the third time interval, were maximum at the fourth time interval (equivalent to the end of the second week), and tapered off rapidly

TABLE III

PER CENT OF RETURNS DURING EACH TIME PERIOD
FOR DIFFERENT NUMBER OF INCENTIVES

Number of Incentives	Time Interval 1	2	3	4	5	6	7	8	Total
0	--	--	0 (0.0%)	14 (33.3%)	16 (38.1%)	6 (14.3%)	5 (11.9%)	1 (2.4%)	42 (100.0%)
1	--	--	10 (5.0%)	79 (39.7%)	55 (27.6%)	36 (18.1%)	14 (7.0%)	5 (2.5%)	199 (100.0%)
2	--	--	15 (7.0%)	78 (36.3%)	62 (28.8%)	35 (16.3%)	13 (6.0%)	12 (5.6%)	215 (100.0%)
3	--	--	6 (5.0%)	56 (46.7%)	31 (25.8%)	19 (15.8%)	7 (5.8%)	1 (0.8%)	120 (100.0%)

by the eighth interval. The superiority of increased numbers of incentives in interval 3 and especially in interval 4 suggests that incentives might be effective in securing a more rapid return. By the end of the fourth interval, 51.7 per cent of the total returns of the three incentive cluster were in, but only 33.3 per cent of the returns of the zero incentive cluster. However, a chi-square test of the independence of the number of incentives and the return time indicated the differences in response rates were not highly significant ($X^2=16.13$, $.20<P<.30$).

Sex

The probability of a questionnaire being returned was found to be significantly related to the sex of the subject. With an overall return rate (at the end of the four week study period) of 54.0 per cent, 60.2 per cent of the females had responded versus 41.8 per cent of the males. Actual numbers are shown in Table IV below.

A chi-square test of the difference in the return rates of males and females yielded an X^2 value of 32.45 ($P<.001$). For this population, females were more likely to return questionnaires than were males.

TABLE IV

NUMBERS AND PERCENTAGE OF QUESTIONNAIRE RETURNS FOR MALES AND FEMALES

	Male	Female	Overall
Returned	151 (41.8%)	425 (60.2%)	576 (54.0%)
Non-Returned	210 (58.2%)	281 (39.8%)	491 (46.0%)
Total	361 (100.0%)	706 (100.0%)	1067 (100.0%)

The data reported in Tables V and VI suggest that the number of incentives is more important for males than for females. The male response rate rose from 27.6 per cent for zero incentives to 57.6 per cent for three incentives, a difference of 30 per cent. For females, the percentages were 49.3 and 65.6; a difference of only 16.3 per cent.

TABLE V

RETURNS FOR MALES RECEIVING DIFFERENT NUMBERS OF INCENTIVES

	0	1	2	3	Total
Return	8 (27.6%)	51 (37.8%)	54 (41.2%)	38 (57.6%)	151 (41.8%)
Non-Return	21 (72.4%)	84 (62.2%)	77 (58.8%)	28 (42.4%)	210 (58.2%)
	29 (100.0%)	135 (100.0%)	131 (100.0%)	66 (100.0%)	361 (100.0%)

TABLE VI

RETURNS FOR FEMALES RECEIVING DIFFERENT NUMBERS OF INCENTIVES

	0	1	2	3	Total
Returned	34 (49.3%)	148 (58.7%)	161 (61.9%)	82 (65.6%)	425 (60.2%)
Non-Returned	35 (50.7%)	104 (41.3%)	99 (38.1%)	43 (34.4%)	281 (39.8%)
	69 (100.0%)	252 (100.0%)	260 (100.0%)	125 (100.0%)	706 (100.0%)

A chi-square test of the differences in return rates for groups of males receiving different numbers of incentives yielded a X^2 value of 10.07 ($P < .05$). The same test for females yielded a value of 5.52 ($.10 < P < .20$). For both males and females, as the number of incentives increased the return rate also increased.

Occupational Cluster[1]

An attempt was made to determine the effect of the occupational skill level of a person's training on the likelihood of responding. In order to do this, each curriculum area or occupation represented in the study was assigned to an occupational group according to the first number of the DOT (Dictionary of Occupational Titles) classification for the given occupation. This classification assigns occupations to occupational groups according to information pertaining to work field, purpose, material, product, subject matter, service, generic term, and/or industry.

After DOT numbers were assigned to each of the 26 trade areas, they were grouped into 3 clusters. The clusters were assigned the letters: A for DOT 0,1 (Professional, Technical and Managerial); B for DOT 2 (Clerical and Sales); and C for DOT groups 3 through 9 (Service, Skilled, and Miscellaneous Occupations). The actual number and percentage of responses for each group is shown in Table VII.

TABLE VII

NUMBER AND PERCENTAGE OF RESPONSES FROM THE THREE OCCUPATIONAL CLUSTERS

		Response	Percentage Return
Occupational Cluster	A	222 of 402	55%
	B	256 of 431	59%
	C	98 of 234	42%

[1]The information related to grouping the occupations was taken from the Dictionary of Occupational Titles, Volumes 1 and 2, 1965 edition.

A chi-square test of the data reported in Table VII yielded a value of 19.13 ($P < .001$). It appears that there are significant differences in the response rates of persons trained at different occupational skill levels. Persons in the clerical and sales cluster responded most frequently while persons in the skilled cluster responded least frequently.

Tables VIII, IX, and X summarize data representing the differences in the response rates of groups of persons at each of the three occupational levels who received different numbers of incentives.

TABLE VIII

RETURNS FOR PERSONS IN CLUSTER-A
RECEIVING DIFFERENT NUMBERS OF INCENTIVES

Number of Incentives

	0	1	2	3	Total
Returned	18 (47.4%)	79 (53.4%)	83 (54.2%)	42 (66.7%)	222 (55.2%)
Non-Returned	20 (52.6%)	69 (46.6%)	70 (45.8%)	21 (33.3%)	180 (44.8%)
	38 (100.0%)	148 (100.0%)	153 (100.0%)	63 (100.0%)	402 (100.0%)

TABLE IX

RETURNS FOR PERSONS IN CLUSTER-B
RECEIVING DIFFERENT NUMBERS OF INCENTIVES

Number of Incentives

	0	1	2	3	Total
Returned	17 (47.2%)	85 (56.3%)	98 (60.9%)	56 (67.5%)	256 (59.4%)
Non-Returned	19 (52.8%)	66 (43.7%)	63 (39.1%)	27 (32.5%)	175 (40.6%)
	36 (100.0%)	151 (100.0%)	161 (100.0%)	83 (100.0%)	431 (100.0%)

TABLE X

RETURNS FOR PERSONS IN CLUSTER-C
RECEIVING DIFFERENT NUMBERS OF INCENTIVES

	Number of Incentives				
	0	1	2	3	Total
Returned	7 (29.2%)	35 (39.8%)	34 (44.2%)	22 (48.9%)	98 (41.9%)
Non-Returned	17 (70.8%)	53 (60.2%)	43 (55.8%)	23 (51.1%)	136 (58.1%)
	24 (100.0%)	88 (100.0%)	77 (100.0%)	45 (100.0%)	234 (100.0%)

Although the differences in response rates among groups receiving different numbers of incentives in each cluster were not highly significant (cluster A-X^2 = 4.53-.20$\angle$P$\angle$.30, cluster B-X^2 = 5.21-.10$\angle$P$\angle$.20, cluster C-X^2 = 2.83-.30$\angle$P$\angle$.50), in all three cases an increase in the number of incentives was accompanied by an increase in returns.

SUMMARY AND CONCLUSIONS

The population of 1100 post-high school vocational school graduates was randomly divided into eleven groups of 100 each to receive a follow-up questionnaire. Each of the eleven groups received a different follow-up treatment. It was found that the overall percentage of returns varied from a low of 42.9 per cent for the group with no special treatment to a high of 63.2 per cent for one group with three different incentives. The response rates elicited to the four different numbers of incentives (incentive clusters zero - three) were found to be different with a X^2 of 12.09 ($P\angle.01$).

Time interval analysis showed the greatest response for all groups to be near the end of the second week after the questionnaire was sent, which is similar to what Orr and Neyman (1965) found relative to Project TALENT questionnaire returns. The data indicated that as the number of incentives increased, there was a slight decrease in the length of response time.

In terms of sex, females responded much better overall than males -- 60.2 per cent for females, 41.8 per cent for males ($X^2 = 32.45$, $P < .001$). Interestingly, although the number of incentives seemed important in stimulating responses from both sexes, it appeared much more important for males than for females. Of the males, only 27.6 per cent in the zero incentive category returned their questionnaires, while 57.6 per cent of those in the three incentive category returned their questionnaires (a range of 30.0 per cent). For the females, the figures were 49.3 per cent in the zero incentive category and 65.6 per cent in the three incentive category (a range of 16.3 per cent).

An attempt was made to determine response rate differences among occupational clusters. As the skill level increased, the number of returns tended to increase ($X^2 = 19.13$, $P < .001$). This finding tends to support that of Orr and Neyman who reported that response rate is positively correlated with aptitude. Also, there is a tendency for the response rate to increase as the number of incentives increases for all three occupational clusters.

There is little doubt that follow-up returns might be increased substantially by increasing the number of incentives and, therefore, the novelty of the follow-up procedures.

POSTSCRIPT

After the four week period of the questionnaire study, additional follow-up procedures were undertaken. All eleven treatment groups received the same second follow-up procedure consisting of the mailing of another cover letter and a green colored questionnaire. By eight weeks after the beginning of the study, the total response was 76.1 per cent. It is interesting to note that the proportion of previously unreturned questionnaires which were returned after the second follow-up continued to favor those treatments with greater numbers of incentives, as shown in Table XI.

TABLE XI

PERCENTAGE OF PREVIOUSLY UNRETURNED QUESTIONNAIRES RETURNED AFTER THE SECOND FOLLOW-UP

Original Groups (Number of Incentives)

0	1	2	3
43%	49%	49%	53%

At this point, addressess of the non-respondents were checked through such sources as the Minnesota Drivers License Bureau, the Minnesota Drivers License Plates Bureau, and local telephone directories. Fourteen weeks after the beginning of the follow-up, the overall response rate was approximately 82 per cent. The response rate for males was 75.3 per cent and the response rate for females was 84.8 per cent.

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